PROGRESS REPORT OF WOLF POPULATION MONITORING IN WISCONSIN FOR THE PERIOD OCTOBER 2005 - MARCH 2006

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ABSTRACT

The Wisconsin Department of Natural Resources (DNR) annually conducted population surveys of gray wolf (*Canis lupus*) since 1979, using radio tracking of collared wolves, snow track surveys, and collection of reports of wolf observations. Wolves were delisted to protected wild animals by the state in 2004, and the US Fish and Wildlife Service began a delisting process in March 2006 to remove wolves from the federal list of endangered species. A minimum count over winter 2005-2006 consisted of 465 to 502 wolves. At least 11 were loners, another 2 were possibly loners, the remaining 452-489 wolves were distributed in 115 packs. A total count of 449 to 485 wolves occurred outside of Indian reservations, and represents the third year of the population at or above the goal of 350 wolves outside of Indian reservations. The state wolf population increased by 7% from last year's estimate of 435 wolves. Mean home range for 18 adult wolves was 32 mi^2. Total occupied range of territorial wolves in winter was 5450 mi^2, which was occupied at a density of about 1 wolf per 11 mi^2. An estimated 151-222 pups were present in late winter with an estimated survival rate of 32%.

INTRODUCTION

The gray wolf (*Canis lupus*) was extirpated from Wisconsin in the late 1950's following a state bounty program that lasted from 1865 to 1957 (Thiel 1993). Elimination of the bounty in Wisconsin (1957), Michigan (1960) and Minnesota (1965), as well as endangered species designations, allowed wolves to re-colonize Wisconsin in the mid 1970's (Wydeven et al. 1995). The state of Wisconsin listed the gray (timber) wolf as a state endangered species in 1975, and began formal population monitoring in 1979 (Wydeven et al. 1995). Intense population monitoring of wolves was considered an important management strategy in the 1989 recovery plan (Wisconsin DNR 1989), and the 1999 state wolf management plan (Wisconsin DNR 1999). Wolves were reclassified as a state threatened species on 1 October 1999. On 1 August, 2004 the gray wolf was removed from the state list of threatened and endangered species, and was listed as a protected wild animal.

The U.S. Fish and Wildlife Service listed the eastern gray wolf as an endangered species in 1967 and again in 1974 under the 1973 Endangered Species Act (U.S. Fish and Wildlife Service 1992). Wolves were reclassified to threatened in 1978 in Minnesota. Wisconsin, Michigan and the remainder of the Eastern Distinct Population Segment were downlisted to threatened on 1 April 2003. A population of 100+ wolves in Wisconsin and Michigan for 5 or more years and a stable population in Minnesota were criteria for delisting the Eastern DPS. The combined state populations have exceeded 100 wolves for Wisconsin and Michigan since 1994, and currently there are at about 900 wolves; thus the population has been at the 100+ goal for 13 years. The federal delisting process for the Eastern DPS of gray wolves began in summer 2004, and was expected to be completed in 2005, but a federal judge ruling from Oregon on 31 January 2005 reversed that process. As of 31 January 2005, all wolves downlisted to threatened by the federal government in 2003, were re-listed as endangered, and the de-listing process started for the Eastern DPS was put on hold. Thus the State of Wisconsin currently lists wolves as protected wild animals, but the federal government continues to list as endangered, and any lethal control by the state is possible only with special permits.

To deal with increasing wolf depredation, the U.S. Fish and Wildlife Service issued a special sub-permit in early April 2005, to allow the Wisconsin DNR to conduct some limited lethal controls on depredating wolves. But because of a suit brought by environmental and animal welfare organizations, the permit was withdrawn on 13 September 2005. A new permit request by Wisconsin DNR and environmental assessment by USDA-Wildlife Service was started in fall 2005, and in late April 2006, a new permit was issued to the State of Wisconsin to allow limited lethal controls on problem wolves.

The U.S. Fish and Wildlife Service again began a new delisting process for wolves in the western Great Lakes area on 27 March 2006 (Federal Register, Vol. 71, No. 58, 15266-15305 http://www.fws.gov/midwest/wolf/2006pr_dl/index.htm). A new Western Great Lakes Distinct Population Segment (WGL DPS), was created to delist wolves in Minnesota, Michigan and Wisconsin, and portions of the adjacent states of North Dakota, South Dakota, Iowa, Illinois, Indiana, and Ohio. Comments on the new delisting effort were collect through 26 June 2006, and the final delisting could occur by late 2006 or early 2007.

The state delisting goal of 250 wolves outside of Indian reservations was initially achieved in 2002, and the state delisting process was finalized in 2004, with wolves designated as protected wild animals in Wisconsin Statutes (NR10.02). The state management goal of 350 wolves

outside of Indian reservations appears to have been achieved in 2004, and will lead to more liberal controls to keep the population near 350 once federal delisting is completed.

The present report covers surveys conducted in Wisconsin from October 2005 through March 2006, but some survey information extends from mid September 2005 to mid April 2006. This report documents the mid and late winter wolf population in the state, and represents the 27th consecutive year of these winter wolf population surveys. Also, this was the 11th year that volunteer carnivore trackers were used to assist in winter surveys of the state wolf population.

ACKNOWLEDGEMENT

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METHODS

A territory mapping system (Fuller et al. 2002) was used to determine the Wisconsin wolf population. Radio telemetry surveys were conducted as described by Mech (1974), and were used to determine territory distribution and wolf numbers for packs with collared wolves (Fuller and Snow 1988). Aerial locations were obtained on VHF radio collared wolves about once per week. Wolves were trapped from early May to early September and attempts were made to obtain one collared wolf in about half to one third of the packs in the state (Wydeven et al. 1995, Wisconsin DNR 1999). Movements of collared wolves were assumed to represent the general movements of the pack, and maximum count obtained from the air in mid or late winter was assumed to represent the whole pack. When collared wolves moved outside of known territories in extraterritorial moves or dispersals, the collared wolves were assumed to be traveling by themselves. Wolves were rarely observed from the air in Wisconsin, except during winter when collared wolves were observed about 30% of the time, but during poor snow years, such as 2002-2003, wolves were observed 11% of the time. Pilots made special efforts to visually observe wolves from December through March. Numbers of visual observations were reported for all collared wolves in relationship to total radio-locations during the period of December through March.

Home range areas in the winter period (15 September-14 April) were calculated using the minimum convex polygon (Mohr 1947). Isolated locations more than 5 kilometers (3.1 miles) from other points were considered extra territorial moves (Fuller 1989). Areas between clusters of radio-locations more than 5 km apart were considered part of the home range area if there were regular movements between clusters.

During spring and summer 2005, Shawn Rossler and Thomas Gehring of Central Michigan University conducted research testing shock collars as a means to deter wolves from specific areas. This system is being tested as a procedure for deterring wolves from areas of livestock concentration. Details of the research findings are reported in the progress report of the research (Rossler 2005).

Snow tracking and sign surveys (Thiel and Welch 1981, Wydeven et al. 1996) were used by DNR trackers to obtain counts of wolves in packs without collared wolves, or to supplement survey information for collared packs where few observations were made from the air. Presence of raised leg urinations (RLU's) especially double raised leg urinations (urinations by both alpha male and female) were used to determine territory marking and likeliness of breeding activity (Peters and Mech 1975). Estrus blood in the snow with the RLU's of alpha females further demonstrated likely breeding activity (Rothman and Mech 1979). Breeding status was surmised for some packs based on regular breeding history in the past or large pack size, and in some cases was determined by observation of freshly excavated den sites in late winter. Surveys were conducted by slowly driving snow covered roads within 1 to 3 days after new snow falls. During a specific survey, as many snow covered roads as possible were followed within specific survey

blocks that covered about 200 square miles each (Wydeven et al. 1996, Appendix 3). Roads were followed until wolf tracks were encountered and these tracks were backtracked and forward-tracked to see where they joined and left the road. Separations of packs were determined by distance between track and sign observations, direction of movements, timing of observations, presence of radio collared packs, historical pack use of an area, and knowledge of focal points such as den sites and rendezvous sites.

Attempts were made to conduct track surveys across most of the heavily forested areas of northern and central Wisconsin. Track surveys were especially focused on areas with historical wolf presence, recent observations of wolves, or areas of highly suitable wolf habitat (Mladenoff et al. 1995). Although emphasis was on conducting surveys in fairly recent snow, surveys in older snow did allow detection of wolf presence and of wolf breeding activity (RLU's), but older snow was less suitable for precise counts due to vehicle activity, snowplowing, melting-freezing, and perhaps multiple passages by wolf packs.

Along with DNR trackers, volunteer trackers representing other agencies or the general public helped provide additional snow track surveys. This was the eleventh year for the volunteer tracking program. Most heavily forested and mixed forest areas were subdivided into 133 survey blocks (Appendix 3, Wydeven et al. 1996). Volunteers were asked to conduct at least 3 "good" surveys per block, and track about 60-100 miles of road. All volunteers were required to attend weekend wolf ecology courses and day-long track training programs.

Public and agency reports on wolf observations were also used for determining wolf abundance and distribution. Such surveys were included in the state wolf count only if verified by experienced trackers, or photos or videos, if available, to verify wolf identification and counts. Track observations were used as part of the state wolf count only from experienced trackers, or from well documented observations (photos, plaster casts, scats collected, etc.).

Wolf packs along the border with Michigan or Minnesota were included in the Wisconsin wolf count if they appeared to have more than 50% of their home range or territory in Wisconsin. Thus some Minnesota and Michigan packs that overlapped only slightly into Wisconsin were not included as part of the state count.

Area of wolf occupancy across the state during winter was determined by summing up the area of all pack territories and multiplying by 1.37 to include 37% interstitial areas around the territories (Fuller et al. 1992). Current year's information on winter home range was used for collared packs, and the most recent values obtained within the last 3 years were used for previously collared packs. Wolf zone average values for territorial adult wolves were used to estimate area for non-collared packs or packs not collared in the last 3 years. Territories of lone wolves were included in estimates of home range area and wolf population density if lone wolves were remnants of previously documented packs, and the loners continued to appear to be occupying regular territory areas. Lone wolves that appeared to be dispersing or floaters that did not seem to occupy regular home range areas were not used in density estimates of the wolf population.

Pup estimates in packs during winter were determined by change in wolf numbers from previous surveys, knowledge of pup presence from summer howls and observations, and knowledge of pack composition from previously captured wolves. Pup survival was estimated by taking the midpoint of the range of estimated pups in winter, and dividing by the number of breeding females the previous winter, multiplied by 5.2 pups (the mean number of implanted fetuses in 5 adult females examined in Wisconsin in the 1980's and 1990's).

RESULTS AND DISCUSSION

A total of at least 115 packs, and 5 lone wolves occupied regular territories or home range areas over winter 2005-2006 (Figure 1). Wolf pack territories occurred in 30 or 31 counties including 21 in northern Wisconsin and 9 or 10 in central Wisconsin. Most wolf pack territories occurred in Zone 1, the Northern Forest (94 packs), and Zone 2, the Central Forest (14 packs), and a small number of packs occurred in the rest of central Wisconsin in Zone 3 (7 packs). Packs in Zone 3 were small, mostly consisted of 2 or 3 wolves and only one held 4 wolves; the zone probably was marginal habitat for wolves. A total of 39 (32%) of the 120 wolf territories contained at least one collared wolf during part of the winter survey period.

During the winter period 43 radio collared wolves were monitored in 38 packs (Table 1). A total of 13 wolves went off the air in winter, including 8 dying and signal lost on 5 (although 510F was rediscovered later in 2006). Six collared wolves were added to the total number of collared wolves including 3 that had dispersed into Wisconsin from Upper Michigan, 2 captured by coyote trappers (plus recapture of M726M), and 1 captured and collared by USDA-WS to monitor as a nuisance animal. The 43 radio collared wolves represented 18 adult males, 19 adult females, 2 yearling males, 3 pup females, and one unknown wolf (9000, self collared). By early spring 2006, 30 wolves remaining on the air included 12 adult males, 14 adult females, 2 yearling males, and 2 pup females.

Mean winter home range for 19 wolves with 20 or more radio locations was 31.5 mi^2, and was 32.4 mi^2 for 18 adults located 20 or more times (Table 2). Winter home range seemed to average slightly larger in northern Wisconsin (32.4) than in Zone 3 (24.0), but sample size was low. Winter home range areas ranged from 14 mi^2 for adult male M726M of the Magee Creek Pack to 64 mi^2 for adult male 522M of the Rainbow Lake Pack.

Dispersing Wolves

Wolf 505F, was captured as an adult female on 30 May 2004 in the Bootjack Lake Pack area of northwest Oneida County. In winter 2005-2006 she seemed to shift over to the Musser Creek area east of Phillips in Price County. The previous Musser Creek group was apparently eliminated in depredation control actions in summer 2005. On 19 December 2005, 505F was in the Bootjack Territory in Oneida with two other wolves, but by 9 January 2006 was in the Musser Creek area in Price County 12 miles to the east, also with two other wolves. She remained with 2 other wolves in the Musser Creek area in winter, and it was not clear if all three wolves had split off from the Bootjack Lake Pack together or if 505F met up with two other wolves after leaving the Bootjack Lake Pack. The Musser Creek Pack was not listed as a separate pack in the wolf count because 505F died on 3 May 2006, and 2 other wolves were found dead nearby, earlier in the spring.

Wolf 510F, was captured as an adult female on 18 March 2006 in the Noch Hanai Pack area east of Black River Falls. She remained in the general area through 5 April 2006 when she apparently dispersed northward. Wolf 510F was found on 31 May 2006 in the Beaver Dam Lake area of Ashland County 149 miles to the north of her last location, and 146 miles north of her original capture site. We may determine in summer whether she is successful joining this pack.

Wolf 518M, was captured as an adult male in the Smoky Hill Pack of southwest Bayfield County on 31 May 2005. He was fitted with a VHF radio collar and an experimental shock collar

(Rossler 2005). The wolf began spending time in the Eau Claire Lakes in southeast Douglas County in early winter, and on 30 December 2005 was found severely injured in the southern portions of the Shoberg Lake Pack territory, and was euthanized. The last location was about 9 miles northwest of his original capture site.

Wolf 554M, was captured as an adult male on 18 May 2005 in the Dunbar Pack of northern Marinette County. He disappeared from the Dunbar Pack area after 25 November 2005, and was found shot to death on 29 January 2006 in Menominee County, Michigan 49 miles east of his original capture site.

Wolf M719m, was captured as a yearling male by a coyote trapper on 2 November 2003 in northwest Baraga County, Michigan and was monitored in his natal territory until 9 February 2005. Wolf M719 was detected in eastern Forest County, Wisconsin 65 miles south of his original capture site on 22 November 2005. The wolf remained in the Morgan Lake area of eastern Forest and western Florence County with another wolf throughout the study period.

Wolf M2701m, was captured as an adult male on 22 May 1998 in the Chaney Lake area of southwest Gogebic County, Michigan and eastern Iron County, Wisconsin. He was recaptured in this territory on 26 May 2001, but lost after 31 March 2004. The old male was detected to the southwest of his original territory, in the Murray's Landing Pack on 22 November 2005, 16 miles southeast of his original capture site, and remained in the Murray's Landing Pack area through spring with 3 other wolves. The male wolf was at least 10 years old by spring 2006.

Wolf M3617m, was captured as an adult male on 2 June 2004 in Iron County, Michigan, north of Crystal Falls. He was lost after 3 November 2004. The male wolf was detected in the McArthur Pine area of eastern Forest County, Wisconsin on 5 April 2006 and 42 miles southeast of his original capture site. The male appeared to join the small pack in this area.

Buffalo County Female, a yearling or young adult wolf was killed by a vehicle in northwest Buffalo County, 27 October 2005 near the Tiffany Wildlife Area, and 53 miles west of the nearest pack.

Dunn County Male, a yearling male was killed by a vehicle on I-94 on 25 February 2006 in Dunn County, and 40 miles southwest or west of the nearest pack.

Grant County Male, an adult male was apparently shot to death and found on 30 October 2005 in western Grant County and 92 miles south of the nearest pack.

Oconto County Male, a yearling male was killed along Highway 141 on 13 March 2006 in central Oconto County and about 50 miles southeast of the nearest known breeding pack.

Wolf Telemetry Summary

Wisconsin DNR pilots detected a total of 128 different wolves during the winter period, representing 28% of the minimum winter count of 465 wolves (Table 3). In 2005, 34% of the state wolf population was detected by pilots, compared to 27% in 2004 and 39% in 2003.

Percentage of times collared wolves were observed from the air averaged 30% statewide. The mean observation rate for 4 wolves in the Central Forest (Zone 2) was zero, probably due to poor snow conditions most of the winter, and use of dense cover by wolves. The mean observation rate for Northern Forest wolves (Zone 1) was 34%, and central Wisconsin wolves (Zone 3), was 21%.

Mean pack size of 26 packs observed by pilots was 4.5 (S.D. = 2.4) and ranged from 2 to 12 wolves. The single pack observed in Zone 3 held 4 wolves, compared to an average of 4.5 wolves for 25 packs in Zone 1. Overall mean pack size was similar for 28 packs observed in 2005 with mean of 4.6 wolves (S.D. =2.1) per pack.

Wolf Mortality and Disease

Twenty-four wolves were found dead in Wisconsin in the 2005-2006 winter study period (Table 4). In addition 3 apparent wolf-dog hybrids (*Canis lupus x C. familiaris)*, were collected that were initially considered to be dead wolves, and 2 Wisconsin wolves were found dead in adjacent states of Michigan and Minnesota. Overall mortality for the 26 wolves included, 9 (35%) illegal shootings, 1 (4%) possible poisoning, 9 (35%) vehicle collisions, 2 (8%) mange/disease, 2 (8%) unknown trauma, 1 (4%) other wolves, and 2 (8%) unknown. Among 10 collared wolves mortality included: 4 illegal shootings, 1 poisoning, 2 vehicle collisions, 2 mange/disease, and 1 unknown trauma.

Losses from mange were lower than previous years, probably due in part to very mild winter weather, which was less likely to kill wolves with serious cases of alopecia (hair loss).

No wolves died from control actions at depredation sites during winter, although depredation control activities had become a major mortality factor during the summer period (Wydeven et al. 2006). Reduced mortality from depredation controls was partially due to a court challenge to the U.S. Fish and Wildlife Service for permits issued to Wisconsin and Michigan, which caused the states to lose these permits. During the winter period, depredations on livestock were low, so that even if authority existed for lethal controls, few wolves would have been killed.

It appeared that as many as 50% or more of collared wolves died from illegal activities. Illegal kill may be increasing in recent years.

Wolf Depredation on Domestic Animals

A total of 11 cases of wolf depredation occurred during the winter period, including 3 depredations on livestock and 6 depredations on dogs (Table 5). The death of a domestic rabbit initially considered wolf depredation was apparently caused by a wolf-dog hybrid. A wolf caused some damage to irrigation equipment on a cranberry farm in Jackson County; the Wisconsin wolf depredation program reimburses only for loses to livestock and pets, so no compensation was provided.

Non-lethal controls were offered at all seven farms with depredations and threats to livestock, but only three farms excepted treatment (Table 6). As stated above, lethal controls were not a possibility during the winter period, due to loss of authority from the U.S Fish and Wildlife Service.

Reported Wolf Observations

A total of 192 reports of wolf observations that were classified as "probable" or "possible" were received in the winter period of 2005-2006 (Table 7). Reports were up from the 163 reported last year, and 145 in winter 2003-2004, but less than the record reports of 235 in winter 2002-2003 (Wydeven et al. 2005). Wolf reports were received from 39 Wisconsin counties, with highest reporting rate for Price (21), Iron (17), and Douglas (14) Counties. Most wolf reports were from Zone 1 in northern Wisconsin (152), but low numbers of reports were received from Zone 2 (9), Zone 3 (22), and Zone 4 (19). Wolf reports were received from 11 counties in Zone 3, with a small concentration occurring in Waupaca and Shawano Counties. In Zone 4, wolf reports were received from 9 counties, with a small concentration in Door and northern Kewaunee Counties. A dead wolf-dog hybrid was found in northern Kewaunee County near the location of some of the reports, but no reports were received for Grant County where a shot wolf was found. Lone wolves apparently traveled extensively through the state, but some reports were probably of coyotes, dogs or wolf-dog hybrids.

Volunteer Track Surveys

Volunteer trackers turned in surveys for 67 survey blocks (74%) of 91 assigned survey blocks (Table 8). DNR trackers surveyed a total of 79 blocks, and both groups combined surveyed a total of 105 of 133 designated survey blocks. Blocks not surveyed included those surveyed only by radio telemetry, blocks in Indian reservations, and blocks in marginal wolf habitat, with no or few reports of wolf activity. Return rate for 2006 was less than the rate of 89% observed last year, but similar to 2004 rate (71%). Volunteer trackers detected 255-281 wolves along 4896.8 miles, and DNR trackers counted 271-295 wolves along 2843.8 miles. Volunteer trackers averaged 3.7 surveys per block, covering 73.1 miles, and 13.4 hours per block.

Both DNR and volunteer trackers surveyed wolves in 41 survey blocks. Overall rates of wolf detection were similar with 147 - 159 wolves detected by DNR trackers and 159- 173 wolves detected by volunteers. DNR detected more wolves in 13 blocks, volunteers detected more wolves in 19 blocks, counts were the same in 7 blocks, and no wolves were detected in 2 blocks. Overall rates of wolf detection indicate volunteers are providing suitable counts of wolves.

Statewide Wolf Count

The Wisconsin wolf population estimated for mid to late winter 2006 was 465 to 502 wolves. This included 452 to 489 wolves in 115 packs, 11 loners, and another 2 possible loners (Table 9, Figure 3). This count represents a minimum number of wolves estimated in the state from a composite of information on wolves from radio tracking, snow track surveys, and reports of wolf observations.

The count obtained in mid to late winter 2005 was 425 to 455 (Wydeven et al. 2005). During spring and summer surveys and depredation control activities in 2005, 5 additional packs were detected that had been missed in the winter surveys of 2004-2005, and included the Pokegema

River Pack of northwest Douglas County, South Range Pack of northern Douglas County, Lake Nebagamon Pack in Douglas County, Venison Creek Pack in Sawyer County, and Caves Creek in northwest Marquette County. Based on summer surveys in 2005, at least 2 adults existed in all five of these packs the previous winter. Thus the adjusted count for winter 2005 will be 435 to 465 wolves, and 113 packs. Total count of wolves outside of Indian reservations was 424-452. Using the bottom range of the count, the statewide wolf population increased 7% in 2006, and had increased 17 % in 2005. Average annual increase between 2002 through 2006 was 7%, compared to average annual increase of 20% from 1985 through 2002.

A total of 449- 485 wolves occurred outside of Indian reservations (16 -17 wolves in 5 packs occurred on tribal land). The management goal for Wisconsin was a wolf population of 350 wolves outside of Indian reservations, and thus the current population is about 100 wolves above the goal. Because wolves continue to be federally listed the only lethal controls authorized on the wolf population are the euthanizing of verified depredators by special permit. If federal delisting is completed in late 2006 or early 2007, more flexible population controls will be possible.

An estimated 151 to 222 pups existed in the winter wolf population. Using a mid point of 186 and an estimated 113 potential breeding packs, estimated pup survival to late winter 2006 from spring 2005 was 0.32 or 32 %. This is slightly higher than pup survival rate of 0.31 estimated in 2005 (Wydeven et al. 2005). Pup survival was moderate for Zone 1 (0.33), and Zone 2 (0.38), but very low for Zone 3 (0.06). At least 22 potential breeding packs (19%) had no apparent surviving pups by late winter. Only 2 of 7 potential breeding packs in Zone 3 appeared to have surviving pups in late winter, suggesting high pup mortality in more marginal wolf habitat.

Average pack size was 3.9 to 4.3 wolves across the state, which was slightly higher than 3.8 to 4.1 wolves per pack observed in 2005 (Wydeven et al. 2005). Average pack size by wolf zones was: 4.0 to 4.3 in Zone 1, 3.8 to 4.0 in Zone 2, and 2.4 to 2.7 in Zone 3. Packs monitored by radio telemetry averaged 4.5 wolves per pack; trapping and collaring are normally more successful in larger packs, thus this may be biased upward. Snow track surveys probably detect more recently formed pairs that are less often detected by radio tracking.

The area covered by 115 packs and 6 loners during winter was estimated to cover 3978 mi^2. Allowing for 37% interstitial areas (Fuller et al. 1992), the area occupied by territorial wolves in winter was estimated to cover 5450 mi^2, thus 458 to 493 territorial wolves occurred at a density of one wolf per 11.1- 11.9 mi^2 within occupied wolf range. Area of occupancy was based on average winter home range size of 32 square miles in northern Wisconsin, but would be larger if year-round territories of about 48 mi^2 were used (Table 10). Area of winter wolf range and wolf densities across the 3 wolf zones were as follows: Zone 1, 4562 mi^2 at 1 wolf / 10.9- 11.8 mi^2; Zone 2, 658 mi^2 at 1 wolf / 11.5- 12.2 mi^2; Zone 3, 230 mi^2 at 1 wolf / 12.1- 13.5 mi^2. Overall wolf range declined some from 2005 when 6373 mi^2 was estimated to be wolf range, but was occupied at lower densities of one wolf per 14.2 – 15.2 mi^2 in 2005 (Wydeven et al. 2005). The 1999 wolf plan estimated 5812 mi^2 of potential primary wolf habitat, and 5015 mi^2 of secondary habitat. It appears that most areas of both primary and secondary habitat are occupied in northwest and central Wisconsin, but some areas of primary habitat remain unoccupied in northeast Wisconsin. Primary habitat was based mainly on road densities, but it appears that wolves were able to occupy most areas with extensive forest cover in northwest Wisconsin.

At current population levels the Wisconsin wolf population is about 100 wolves above the goal set for the population in 1999. Until federal delisting occurs, population controls are not possible, except control on verified depredators. The average annual growth rate from 1980

through 2002 was 12%. Since 2003, lethal controls have been authorized, and 70 wolves were euthanized (average of 6.1% of the winter wolf population), but through 2006 the average growth remained at 12 %. Thus overall rate of growth had not changed from the long-term population growth with depredation controls. It appears that in recent years population growth has slowed down from the rapid growth observed in the 1990s. This reduced growth rate probably has as much to do with saturation of suitable habitat as it does with control applied to the population. Although expansion of the wolf population is slowing down, it does appear the population will continue to grow, and likely rate of depredation on farms will likely also increase as wolves spread into more agricultural landscapes. Future controls applied after federal delisting occurs will hopefully stabilize the wolf population to wild land areas.

PLANS FOR NEXT SEASON

Live-trapping and radio-collaring of wolves will be done by WDNR and USDA-Wildlife Services from early May through early September. Howl surveys will be done to determine pup production throughout the summer. Shawn Rossler and Tom Gehring will complete their second year of testing shock collars on wolves. A permit will be issued by US Fish and Wildlife Service to allow lethal controls on problem wolves, and it is expected that groups will try to sue on the permit. USDA-Wildlife Services will likely have numerous depredations to investigate on farms and will be trapping and removing depredating wolves. Dead wolves found in the field will continue to be retrieved and necropsied through the National Wildlife Health Center and Wisconsin DNR Wildlife Health Lab. New research by graduate student Elizabeth (Lizzy) Berkley and Dr. Tim Van Deelen will be conducted, examining fatty acids to determine diet of wolves. Wisconsin DNR will work with US Fish and Wildlife Service, as well as DNR's in Michigan and Minnesota to continue the delisting process in the Western Great Lakes Distinct Population Segment.

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Note: This report is a preliminary report and should not be construed as a finalized publication. Some of the numbers of pack sizes, composition, population figures, and other information may change, as more data becomes available. Persons wishing to cite figures within the report should consult the author.